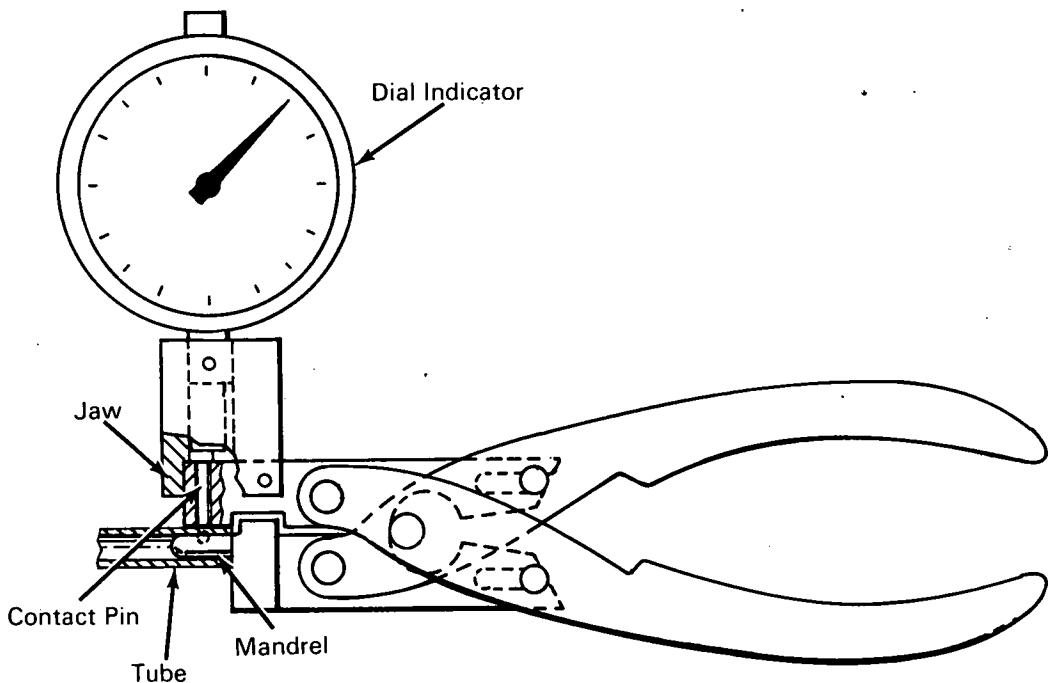


# NASA TECH BRIEF



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## Tube Dimpling Tool Assures Accurate Dip-Brazed Joints



### The problem:

When tubes of different diameters are brazed together in a series-flow relationship, the tube of smaller diameter is not always centered with respect to the larger tube that sleeves it, and the resulting mismatch at the brazed joint adversely affects the brazed joint. If nipples could be formed in an even pattern on the end portion of the larger tube in the same sort of pattern, they would serve as spacers to accurately center the smaller tube prior to brazing.

### The solution:

A portable, hand-held dimpling tool that performs precise dimpling and nipple forming and also provides

control and accurate measuring of the height of nipples and depth of dimples so formed.

### How it's done:

A tube dimpling tool has been made in the form of ordinary pliers that may be hand-held while accomplishing precise tube dimpling and nipple forming operations. Conventional lever arms, connected by a pivot pin, operate to open and close jaw members. The jaw members are so mounted as to move only in parallel motion relative to one another. One jaw member carries a mandrel over which the tube to be worked is sleeved. A projection is provided on the surface of the mandrel and the second jaw has a

(continued overleaf)

clamping surface and through-bore in registry with the mandrel projection.

When a tube is sleeved over the mandrel and its projection, compressing the lever arms closes the jaws forcing the tube against the clamping surface. A contact pin that extends through the bore in the second jaw contacts the surface of the tube opposite the mandrel projection and forms a dimple on the inner surface of the tube and a corresponding nipple on the outer surface. The contact pin is direct-connected to a dial indicator that measures the depth of penetration and, therefore, the height of the nipple formed on the outside of the tube end.

**Note:**

Inquiries concerning this invention may be directed to:

Technology Utilization Officer  
Manned Spacecraft Center  
Houston, Texas 77058  
Reference: B68-10036

**Patent status:**

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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